



- Organization: Carnegie Mellon University
- Lead Investigator: Radu Marculescu
- Current Team Members:
  - Gonzalo Carvajal (postdoc)
  - Huan-Kai Peng (PhD student)
  - Guopeng Wei (PhD student)
  - Kartikeya Bhardwaj (PhD student)
  - Irina Cazan (PhD student)
  - Chieh Lo (PhD student)
  - Connor Walsh (MS student)
  - Harshavardhan Pandit (MS student)
  - Peter Ehrett (Undergraduate student)
  - Ben Siegel (Undergraduate student)



# Research Area: Dynamic Large-Scale Networked Systems: Monitoring, Forecasting, and Engineering Using Streaming Data

## Monitoring and Anomaly Detection using Streaming Data

- **Description:** Uncover hidden patterns to detect anomalous behaviors and issue early warnings
- **Examples:** Unusual communication patterns, outbursts of disease, crises, etc.

## Forecasting and Consensus

- **Description:** Predict short- and long-term trends for events and collective behaviors
- **Examples:** Opinion spreading, voting outcomes, changes at population-level, etc.

## Engineering, Design, and Control

- **Description:** Recommend targeted intervention to achieve desired objective(s)
- **Examples:** Control of disease spreading, opinion influence, thrust, etc.



## Principal Investigator

- Radu Marculescu has over 20 years of experience in computer systems modeling and optimization. He is a leader in the area of communication-centric design of multi-core systems. His recent research involves cyber-physical, social, and biological systems modeling

## Team

- 1 Postdoctoral fellow
- 5 PhD students
- 2 Masters students
- 2 Undergraduate student

## Infrastructure

- The research facility at the Department of Electrical and Computer Engineering in Carnegie Mellon University has both a large number (more than 1000) and wide variety of computers available for faculty and graduate student use
- A number of experimental network test-beds, including the NSF sponsored Very high speed Backbone Network Service (vBNS) and the DARPA sponsored Dartnet/CARIN are also available for computation needs



- Our group will benefit from collaborations that
  - Provide relevant input data
  - Help enhance our expertise on large systems probabilistic modeling
  - Help validate our models in realistic settings
- The types of research groups we seek to join:
  - Interdisciplinary groups involving people from both academia and industry



# Contact Information

- Name: Radu Marculescu
- Title: Professor of Electrical & Computer Engineering
- Organization: Carnegie Mellon University
- Email address: radum@cmu.edu
- Phone number(s): (412)268-8710
- url: <http://www.ece.cmu.edu/~sld/>